

## John W. Berkery, PhD.

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### CONTACT INFORMATION

24 Scott Ave.  
West Windsor, NJ 08550

Phone: (609) 273-0713  
E-mail: jwb2112@columbia.edu

### EDUCATION

**Princeton University**, Princeton, New Jersey  
PhD., Mechanical and Aerospace Engineering, November, 2005  
Master of Arts, Mechanical and Aerospace Engineering, June 2001  
**Cornell University**, Ithaca, New York  
Bachelor of Science (cum laude), Mechanical Engineering, January 1999

### HONORS AND AWARDS

Fusion Energy Sciences Postdoctoral Research Fellowship, Department of Energy, 2005  
Awarded to only two PhD. graduates in the United States per year  
George Van Ness Lothrop Fellowship in Engineering, Princeton University, 2003  
Awarded to only two Princeton graduate students per year  
Program in Plasma Science and Technology Fellowship,  
Princeton University and Princeton Plasma Physics Laboratory, 2000-2002  
Frank O. Ellenwood Prize, Cornell University, 1999  
Awarded to the senior with the highest GPA in heat and power engineering  
Tau Beta Pi, National Engineering Honors Society  
Pi Tau Sigma, Mechanical Engineering Honors Society  
Deans List, Cornell University, 1996-1998

### RESEARCH EXPERIENCE

**Research Scientist - NSTX** October 2007 - present  
*APAM Department, Columbia University, New York, New York*

I am currently a member of a small Columbia University research team working on a collaboration at the U.S. Department of Energy's Princeton Plasma Physics Lab, on the National Spherical Torus Experiment (NSTX). My research is focused on the resistive wall mode (RWM), an instability of the plasma that can appear in high pressure discharges. Specifically, I am experimentally and theoretically researching how the RWM can be stabilized by kinetic effects. This involves proposing and running experiments on NSTX, utilizing a kinetic stabilization code, and presenting findings at conferences and in publications.

**Postdoctoral Research Fellow - CNT** September 2005 - September 2007  
*APAM Department, Columbia University, New York, New York*

The goal of my research program at the Columbia Non-neutral Torus (CNT) was to investigate enhanced confinement of a non-neutral plasma confined on stellarator magnetic surfaces, due to extreme electric fields. This study involved the design and construction of a retractable electron emitter for unperturbed plasma creation and systematic experimental study of equilibrium, stability and confinement properties using the diagnostic techniques developed. Experimentally determined enhanced confinement times were compared to theoretical results. For more information please see: <http://www.apam.columbia.edu/cnt>

**Graduate Research Assistant** September 1999 - September 2005.  
*MAE Department, Princeton University, Princeton, New Jersey*

Completed a PhD research project in the Electric Propulsion and Plasma Dynamics Lab. The project was a fundamental study of current sheet physics to understand the inefficiencies of current sheets in accelerating plasma. This research involved both an extensive experimental study using various plasma diagnostics, such as such as interferometry, spectroscopy, high speed photography,

and magnetic field probing, and the construction of a model of the physics of the current sheet. For more information please see: <http://alfven.princeton.edu/personnel/berkery.htm>

**Undergraduate Research Assistant** 1998-1999  
*Department of Astronomy, Cornell University, Ithaca, New York*

Tracked the progress of the scientific payloads of the Spirit and Opportunity Mars Exploration Rovers for principal investigator Prof. Squyres. Designed calibration equipment and prepared for instrument reviews.

**Undergraduate Research Assistant** 1998  
*MAE Department, Cornell University, Ithaca, New York*

Conducted tests in a drop tower to burn spherical fuel droplets in microgravity.

TEACHING  
EXPERIENCE

**Lecturer** Spring 2007  
*Columbia University, Applied Physics E4301: Intro to Plasma Physics*

Co-taught a small class of undergraduates in an introductory plasma physics class. This is an advanced, topical physics class consisting mostly of seniors.

**Lecturer** Fall 2006  
*Columbia University, Applied Physics E6101: Plasma Physics I*

Co-taught first year graduate students in a small introductory plasma physics course of only five students. Shared the lecture responsibilities with a professor.

**Teaching Assistant** Spring 2001, Spring 2002  
*Princeton University, MAE 324: Structure and Properties of Materials*

Taught juniors and seniors in advanced class on materials science and engineering. Prepared and taught precept to own group of students. Prepared homework solutions and graded homework. Worked individually with students in office hour sessions.

**Teaching and Laboratory Assistant** Fall 2001  
*Princeton University, MAE 221: Thermodynamics*

Taught sophomores in thermodynamics in the classroom and laboratory. Set up, supervised and helped with laboratory experiments. Prepared and taught review sessions. Graded homework and lab reports. Worked one on one with students on technical writing.

REFERENCES

Dr. Steven Sabbagh, Princeton Plasma Physics Lab, C-Site EWA 244, PPPL, Princeton, NJ 08540. [sabbagh@pppl.gov](mailto:sabbagh@pppl.gov), (609) 243-2645.

Professor Thomas Pedersen, Columbia University, APAM Dept., 200 S. W. Mudd Building, 500 W. 120th Street, New York, NY 10027. [tsp22@columbia.edu](mailto:tsp22@columbia.edu), (212) 854-6528.

Professor Edgar Y. Choueiri, Princeton University, MAE Dept., E-Quad, Olden St., Princeton, NJ 08540. [choueiri@princeton.edu](mailto:choueiri@princeton.edu), (609) 258-5220.